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The Potential Of Co-Benefits In Climate Change Mitigation Strategy: An opportunity for Environmental and Social Justice

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Abstract

Climate change mitigation policies can have associated other positive consequences besides greenhouse gases decrease which are known as co-benefits. By analyzing several examples of climate change mitigation actions, we establish that the co-benefits discourse is strongly influenced by utilitarianism. However, there are important, but disregarded limitations to utilitarianism when applied to co-benefits. We sustain that, in this context, they promote environmental and social inequality. We further argue that including a deontological perspective in the co-benefits discourse better guarantees the safeguard of dignity and respect for all individuals affected by the climate change mitigation actions. This integration creates also concrete opportunities for the life improvement of the worst-off. Finally, we discuss the potential, for scientists and politicians, to promote public understanding and approval of climate change mitigation strategies by including rights and moral obligations when considering the impacts and trade-off of co-benefits.

Keywords: Co-benefits, climate change mitigation, utilitarianism, rights, environmental justice

Introduction

Climate change mitigation is a term often associated with technologies and policies aiming to diminish the human impacts causing the disturbance in the normal pattern of global climate. The debate on this concept focuses on the modification of courses of action regarding all the activities that contribute to the phenomenon of climate change. Analyses are often directed to human activities that contribute to the global warming effect and to the ones that may prevent and/ or mitigate the changes in the global climate pattern (IPCC, 2014).

Part of the mentioned discussion revolves around climate change mitigation actions with additional benefits or co-benefits. Co-benefits are emerging advantages of the application of certain climate change mitigation (CCM) actions, i.e. positive outcomes besides the decrease in CO2 emissions that occur from specific mitigation actions. For example, the decrease in oil consumption creates several co-benefits like the reduction of emissions of air pollutants and improved human health.

Agents involved in CCM, both in research (Aunan, Fang, Vennemo, Oye, & Seip, 2004; Harlan & Ruddell, 2011; Nemet, Holloway, & Meier, 2010; Shrestha & Pradhan, 2010) and politics (EC, 2015; EEA, 2014), seldom focus on ethical implications of their activities (IPCC, 2007c), leaving space for missed opportunities to reflect and improve the efficacy of their praxis. Despite the abundant literature on economic and environment angles of CCM with co-benefits, both in theory and in case-studies, there is surprisingly little written about moral considerations on these particular issues[1]. Such situation gives a rational for focusing on the ethical implications of co-benefits.

Departing from an analysis of the discourse on co-benefits, we sustain that the majority of co-benefits research and strategizing focus on the utility of positive CCM outcomes. In contrast to the focus of this paper, generally and in the examples of co-benefits here analyzed, there is a distinct consequentialist moral frame. This criterion creates moral and environmental unwanted consequences that have not yet been fully examined. In the case of this paper, we focus solely on the ethical implications of this phenomenon.

We argue that when considering co-benefits rationale it is not enough to look for (more) good but instead, it is vital to understand if that good is also right. Important negative repercussions occur from the fact that political and the scientific discourses on co-benefits are utilitarian. First, considering co-benefits by utility standards is disadvantageous since it does not cover

comprehensively the specter of potential CCM strategies and consequent advantages, i.e. a utilitarian approach to co-benefits reduces *a priori* the CCM initiatives to be considered, leaving out actions without well-established outcomes. For example, participatory decision-making during project building can be unpredictable and yet be a relevant co-benefit as we discuss in section 3.2.1.Furthermore, significant opportunities to improve the life of vulnerable societal groups (e.g. indigenous populations) are overlooked as the design and implementation of CCM strategies target primarily initiatives that create co-benefits for the majority of the population. In this sense, co-benefits discourse and praxis deepen social inequalities, which is contrary to the principals of sustainable development. This contradiction creates a negative feedback that further impairs CCM strategy.

Despite the current situation, it is possible to change this scenario so that CCM initiatives with co-benefits become an (1) instrument of emancipation and improvement of the worst-off. For this to happen, we claim that moral arguments that target rights and individual dignity should integrate into CCM and co-benefits discourse and by extension in its praxis. If deontological[2] arguments would be (extensively) included onwards, environmental policies would have the added social value of facilitating the (2) acceptance and engagement to the CCM strategy by the people, which are usually, affected the worst by environmental degradation.

With this paper, we aim at extending the general argumentation for sustainability that goes beyond the utilitarian matrix with a new and unique opportunity of co-benefits. Such arguments have the potential to resonate particularly to policymakers that struggle to find moral reasons for the mitigation effort. They face the difficult task of appealing to very different individuals and to manage situations where the power balance is unfavorable towards the minorities and the worst-off. CCM with co-benefits oriented towards the reinforcement of rights can be an equalizing social force in the direction of more environmental and social justice.

The paper is organized in the following way: we start by establishing the dominance of the utilitarianism in the current scientific and political discourses on co-benefits while reflecting on moral limitations that come associated. Further on, we put forward arguments for the moral re-framing for co-benefits. We use a dual approach- ethical and pragmatic- in regard to the necessity of changing the overall justification and framing of co-benefits and CCM actions that concur to them. So far, and in general, concrete CCM actions do not properly fight inequality and social exclusion (Chandler et al., 2002; Sokona & Denton, 2001). Deontological oriented co-benefits might be instruments to change the current scenario.

The goals of this paper are the following: (1) to make clear to both scientists and politicians that co-benefits have a moral dimension associated with self-justification, (2) to unravel the limitations of the most common moral form of co-benefits justification (utilitarian), (3) to present other moral arguments that validate the application of CCM actions with co-benefits aiming to individual rights and dignity, (4) to establish that deontological arguments have the potential to decrease environmental and social inequalities, (5) and to help climate change mitigation engagement, especially by those who are left out by a strictly utilitarian perspective.

Co-benefits of climate change mitigation strategy

Institutions and organizations have different understandings and interpretations of co-benefits. According to OECD (2014) 'co-benefits can best be defined as effects that are additional to direct reductions of GHG and impacts of climate change and have estimated to be large, relative to the costs of mitigation (e.g. anywhere from 30% to over 100% of abatement costs)'. Additionally, they are '(monetized) effects that are taken into consideration as an explicit (or intentional) part of the development of GHG mitigation policies.' (Jochem& Madlener, 2003: 6).

IPCC describes co-benefits slightly differently, as being 'benefits of policies that are implemented for various reasons at the same time—including climate change mitigation—acknowledging that most policies designed to address greenhouse gas mitigation also have other, often at least equally important rationales (e.g. related to objectives of development, sustainability, and equity)' (IPCC, 2007).

In a narrower perspective, West et al. (2013) write that co-benefits are mutual beneficial interactions in terms of energy conservation and pollution reduction, i.e. the decrease in greenhouse gases (GHG) emissions causes a reduction in gaseous pollution. Co-benefits can include the reduction of resource depletion (fossil fuels, land use or biodiversity) (Jackson et al., 2005) and of emissions to air, water, and soil due to changes in energy carriers (Paustian, Antle, Sheehan, & Paul, 2006).

More recently, other perspectives were added to the original meaning of the term such as climate co-benefits, climate and air co-impacts (Crawford-Brown, Barker, Anger, & Dessens, 2012; Hammingh, 2010; Jiang et al., 2013).

Climate co-benefits also include global climate change benefits coming from the implementation of plans or sectorial policies and actions. This perspective has evolved from the idea that developing countries would focus on the development of their economies before having environmental concerns (Miyatsuka and

Zusman 2010).

In this paper, we consider co-benefits to be emerging advantages of the implementation of measures regarding the lowering of GHG. Some of these additional benefits are regional, therefore being more visible and relevant for communities (e.g. 'green jobs'), while others are global, affecting world population (e.g. air quality).

Establishing the moral facet of co-benefits

Co-benefits, associated with CCM efforts, comprise multiple dimensions, which implicate in a first degree, environmental sciences but extend directly to social and politic fields. With sustainability as our perspective, CCM strategies have repercussions outside of the environmental facet, including, for example, social and economic dimensions. These last mentioned scopes have been primarily the object of co-benefits research and discussion resulting in a fair amount of papers and books. Nevertheless, the potential perspectives to analyze this matter do not end on the work already done, since there are other worthy aspects that have been neglected up to this point.

In general, co-benefits are portrayed as a helpful tool for the global strategy against global warming (Betsill, 2001). For example, the fourth IPCC report states that 'co-benefits of mitigation can be important decision criteria in analyses by policymakers, but often neglected. [...] Co-benefits can significantly influence policy [...]. There may be significant economic advantages [...] by GHG mitigation in industrialized countries' (IPCC, 2007c). In our opinion, some of these effects have pertinent ethical ramifications that, though latent, have to our knowledge, been fairly disregarded (IPCC, 2007c; Smith & Haigler, 2008).

The following IPCC description of co-benefits confirms the crucial political role of co-benefits by pointing out that 'most policies designed to address GHG mitigation also have other, often at least equally important, rationales involved at the inception of these policies (e.g. related to objectives of development, sustainability, and equity)' (Markandya & Halsnaes, 2001). IPCC recognizes the social and environmental justice potential of co-benefits and yet makes no claims about who, within those societies, can and will profit from CCM i.e. researchers recognize the environmental and social justice consequences of co-benefits but, so far, without further reflection.

Another important aspect of collateral benefits relative to the evaluative setting of climate change strategies discourse is the increasing prominence of this theme, not only as research topic but also as means of political justification and argumentation in favor of

CCM effort (Nemet et al., 2010; Toly, 2008). This moral dimension of co-benefits is a particularly relevant issue for those who deal with environmental sciences and policy because of its normative element and because of co-benefits being a pragmatic means of justification for CCM strategies.

In the following section, through the analysis of policy and scientific discourses (documents), we show the existence of a strong utilitarian tradition of argumentation in favor of GHG mitigation strategies that originate easily foreseeable co-benefits.

The influence of utilitarianism on co-benefits discourse

Utilitarianism extends its influence further than the philosophical arena, inspiring political or sustainability sciences alike (Kymlicka, 2002; Myrdal, 2013). CCM documents, both international and regional, carry an implicit moral justification why it is good to adopt determinate CCM measures. In this section, we analyze some of those examples concerning the objective of maximization of the overall good as the moral justification of co-benefits, and by extension of climate change mitigation. At the same, time we reflect on the argumentative use of utilitarianism as a communication strategy by researchers and politicians. Additionally, we show the limitations of the present co-benefits discourse; in particular, how it focuses on a misplaced hedonism, how it oversimplifies the implications of CCM strategies and concurs to inequalities.

In this paper, we consider a very broad concept of utilitarianism in the sense of the moral tradition that holds that the morally right action is the action that produces the most good, impartially considered (Lyons, 1965) i.e. a person's good is of the same value as anyone else's. The principle of increased good for more people can be said to be the core idea of (all) utilitarians[3]. Such notion will be the overarching notion when discussing the justification of co-benefits as an additional argument in favor for the application of mitigation strategies. Since the aim of this paper is to make clear the utilitarian matrix in co-benefits discourse, we will not differentiate the utilitarian traditions while analyzing the co-benefits discourse.

In many cases, the arguments in favor of CCM actions are presented in a quantitative way and in the shape of several extra benefits, such as, for example, a decrease in soil erosion, improved wildlife habitat (Plantinga & Wu, 2003) or better general community health (Smith & Haigler, 2008). In these examples, the greater good of co-benefits is described and justified quantitatively. More 'efficiency goods and services' (Jakob, 2006: 185), 'additional

employment' (Jakob, 2006: 185), 'healthier and more active lifestyle' (Harlem & Ruddell, 2011: 128), 'win–win options' (Aunan et al., 2004: 578) are illustrations of a descriptive representation of co-benefits as 'more good for more'.

IPCC (2007a) reiterates the principle of 'greatest amount of good for the greatest number' in its report on co-benefits. The 'prevention of tens of thousands of premature deaths' is a practical case of such reasoning. The scientific weight of this institution gives this argument the potential to affect the political discourse on co-benefits. 'A 30% emissions reduction target could save public health billions' (HEAL, 2015) is another example of the principle of lengthening positive effects to more people by the application of CCM strategies, here proposed by an international organization lobbying on health issues.

The same notion is present in the reflection on co-benefits role in policy making about CCM. Nemet, Holloway and Meier (2010:6) write that 'the full inclusion of [...] co-benefits in [...] climate policy would almost certainly enhance social outcomes because these co-benefits are large and because policy analysis has not valued them'. From the analysis of the quotation above and other general co-benefits' political (UNEP, 2011; WHO, 2012) and scientific discourses (West et al., 2013; Teng & Jotzo, 2014), it is possible to extract an additional pragmatic line of reasoning in relation to co-benefits concept. Sustainability research has abundant examples of messages directed to politicians and policy makers that emphasize the increased and/or direct advantages coming from the application of certain measures to mitigate GHG (Hammingh, 2010; Shrestha & Pradhan, 2010). We argue that a similar trend exists in the way co-benefits are used to make climate mitigation action more appealing to the populations.

Journalists and popular science writers follow this same pattern of justification of CCM throughout co-benefits. As an example, Casey (2015) writes for CBS 'fires in the Brazilian Amazon roughly [cause ...] 400 to 1,700 premature deaths per year [...so] wider efforts to reduce tropical deforestation as a climate mitigation may have air quality co-benefits'. Fang (2011) states that 'moving past the doom and gloomy fatalism of climate change, scientists are looking towards positive action, calling upon the health sector to join the mitigation or adaptation debate [because ...] many measures to reduce emissions [...] have benefits for health'.

The statements above imply that it is still a challenge to make visible to society the positive outcomes of GHG mitigation policies in themselves, especially when the timeline of these benefits is larger than the human lifetime (Fearnside, 2002). So far, scientists and media have

failed to make sufficiently clear the necessity to act against climate change using solely the hazardous consequences of the phenomenon. We argue that one of the reason is the time length of the negative outcomes of climate change since it can cover generations.

The execution of the prescribed CCM actions will have a global positive result, meaning that individual efforts will benefit the collective in the future. However, this future can be and many times is perceived as a distant one, both in time and in space (Moser, 2010). This specificity makes it even more challenging for the individual to give up the present and personal advantages for future and collective benefits. Hardin (1968), in the famous paper of 'Tragedy of the commons', exposed the great difficulty of moving towards a new behavior pattern where considerations about the timeframe and the common good should be included in individual deliberation.

As exemplified before, researchers and political institutions tend to describe the potential positive consequences of CCM in a (more) quantitative way to make the gains more tangible. We reason against this type of 'benefits quantification' on the grounds of argumentative ineffectiveness. If this line of reasoning was achieving its goal, the necessity of further public explanation of CCM benefits should not exist. There has been a strong 'campaign' centered on the quantification of good outcomes originated as co-benefits (Casey, 2015; IPCC, 2014), therefore the general public should claim for (more) co-benefits and CCM with co-benefits. However, this (ideal) situation does not exist, proving the ineffectiveness of the current strategy (Spencer, 2016; Bain, 2016).

Part of the global collective action challenge rests then on the capacity of citizens to understand and valorize positive outcomes for a plural entity, which they can identify themselves in various degrees. In response, international political institutions use the same type of utilitarian arguments to soften this challenge as the citation below demonstrates:

> 'To optimize the social and economic benefits of mitigation actions, [...] strategies need to be examined in light of [...] risks and co-benefits. This can help identify those mitigation strategies that are most effective in reducing the immediate [...] risks [...] in terms of death, illness, health-care costs and lost productivity' (WHO, 2011:9).

We claim that such utilitarian argument is too simplistic in the way it directly links the possible advantages to the implementation of CCM strategies. It disregards social, economic and cultural conditions that dictate the possibility of the existence of such co-benefits. They

fall short on acknowledging relevant contextual variables by focusing on general numbers. For example, variables such as personal income or quality of health facilities contribute heavily to health improvement (Marmot, 2005) and those seem left out of the current CCM strategy.

So far, CCM supporters opt to develop arguments focused on the personal benefit, which is part of the increased net benefit. For example, World Health Organization uses the strategy of transposing co-benefits to a more 'persons' issue', by stressing personal advantages within the collective gains. This reference to a personal satisfaction by the application of mitigation strategies substantiates a relevant idea. If one takes into consideration the classical principal of hedonism, for instances according to the perspective of Bentham[4], it becomes clear the use of such an approach, in the co-benefits discourse. The major objective is to call on a human basic motivation: avoid displeasure[5] from the effects originated by climate change. 'Death', 'disease', 'risk' are common denominators is the political (WHO, 2011; Bollen et al., 2009) and scientific discourses (IPCC, 2007a; 2007b) around CCM that can all be prevented by the emergent co-benefits. It is relevant to point out that the appeal to hedonism in this context falters at least in two ways. CCM strategies involve always sacrifices to our present lifestyle, especially in terms of comfort and consumerism (Roy & Pal, 2009). We further sustain that the search for personal (and collective) satisfaction contributes heavily to climate change. Additionally, similar strategies of avoiding displeasure (in the future) have proven inefficient to combat other (present) ingrained habits (e.g. smoking, drinking).

In direct connection with an appeal to a sort of hedonism, co-benefits' literature tends also to emphasize the 'utility' of the benefits. In this context, utility relates to the added value of something if it increases contentment, prosperity, leverage and/or if it diminishes suffering, damage or disadvantage[6].

On the overall, collateral benefits are essentially presented and reported with an underlying reference to the advantageousness (utility) (e.g. health, resource depletion) and to the mitigation of unpleasant circumstances or consequences of climate change (hedonism) (e.g. death, sickness)[7].

There is a general limitation of the utilitarian moral framework in the 'utility' concept. This short come has particularly negative implications for the co-benefits discourse. There are CCM strategies where the quantity and quality of the good or benefit (in terms of utility) are doubtful and/or difficult to quantify and foresee. Burch, S. (2010) and Engel (2006) describe examples of added benefits coming directly from climate change mitigation activities that are challenging to describe and quantify, in terms of degree and quality, and also in

terms of improvement level (e.g. organizational culture of innovation and collaboration, and states' environmental law). Additionally, a utilitarian approach to co-benefits disfavors the choice of CCM strategies with where processes are the outcomes. In such cases, the added value of such actions depends on the subject's involvement and perception, like in the case of stakeholder's involvement in decision making (more details in section 3.2.1).

Utilitarian arguments, within co-benefits discourse, are used yet in another context. Even though collateral benefits literature does not aim at being turned into bills or laws, its intention is to influence those who are responsible for turning climate mitigation strategies into practice, including politicians, lobbies or pressure groups. In its reports, IPCC tries to make evident to policy makers that co-benefits have the potential to facilitate CCM action, by stating that 'climate policy intersects with other societal goals creating the possibility of co-benefits [...]. These intersections, if well-managed, can strengthen the basis for undertaking climate action.' (IPCC, 2013).

A utilitarian moral framework has a long tradition in western political discourse, especially in democratic societies (Allison, 1990; Burns, 1959), since the principle of 'greater good to more people', can easily be related to the role of governments in increasing the overall societal welfare. As the UN (2014) adverts, good outcomes from CCM will favor, not only society in general but also benefit some large specific groups, such as children. We disagree with this one-dimensional approach of UN and claim that this is only the case if governments adjust CCM strategies to those groups by creating the adequate contextual mechanisms (e.g. children health programs). Furthermore, we sustain that the political discourse and praxis, corroborated by the scientific stance on co-benefits creates a misplaced idea of the automatic creation of justice. Quantifications of potential good do not show the distribution of this good. Commonly, large groups hold within (environmental and social) inequalities that are not visible in the average quantification of welfare. Moreover, the creation of general actions to increase the net benefit only reproduces (or even augments) the previous inequalities if mechanisms of redistribution of good are not in place. In the case of CCM with co-benefits, the current utilitarian approach does not require the establishment of such mechanisms and consequently, it, at least, reproduces the current inequalities, if not increased them (Vasconcellos Oliveira & Thorseth, 2016).

Underlying the generalized application of a utilitarian justification matrix to the co-benefits discourse, there is a tacit recognition of the moral correctness of co-benefits and of the CCM actions that originate them. However, using a utilitarian moral matrix for co-benefits and the

originating climate changing actions have moral and argumentative limitations that can jeopardize the CCM effort and reinforce inequality. In the next section we discuss how the incorporation of deontological arguments in co-benefits discourse and praxis creates opportunities for environmental and social justice and reinforces CCM engagement.

The moral contribution of deontology to the co-benefits' moral matrix

When it comes to the preferential application of climate change mitigation measures, especially with different associated co-benefits, there is no easy or straight answer. Any deliberation process encompasses a moral dimension that requires reflection especially when the outcome of a choice affects human beings.

Usually, climate change mitigation strategies involve benefits deriving from synergies and/ or trade-offs of distinctive dimensions (e.g. climate change and food security), (Valin et al., 2013) affecting differentially several societal groups (e.g. general population vs. well-off groups). Decreasing carbon emissions is achievable by promoting electric vehicles or via free public transportation. However, the ethical and environmental implications of the measures and of the co-benefits affect differently population groups (Vasconcellos Oliveira & Thorseth, 2016).

Morally orienting co-benefits action and justification by utilitarian perspective may serve well the majority (general population), but does not protect the interests of minority groups, since the utilitarian principle of increased good for more people subordinates the good for fewer individuals.

As climate mitigation does not have a homogeneous effect, the potential added benefits will not either. As Tubiello & Fischer (2007) point out, regions benefit differentially from climate mitigation actions and there are even cases where some areas will be worst-off by the application of mitigation measures. This means that by considering climate change strategies with co-benefits targeted to worst-off populations, we might be rendering (more) justice to them. However, directing co-benefits towards these smaller numbers is not a priority in the present utilitarian co-benefits discourse.

Despite the present moral and argumentative limitations of the co-benefits discourse, it is possible to change it. There are possibilities of improving the overall moral frame of these emergent benefits so that they become existent and fairer to the usual left-out group(s) of utilitarian discourse.

According to one of the most important contemporary deontologist, Rawls, and following his principles of justice, society

should be set and act in a way that social cooperation is done for the reason of making the necessary conditions (rights) for citizens to lead a decent life (Rawls, 1971). In many contexts, co-benefits represent real possibilities of social improvement but require societal cooperation that can only come if the benefit of the smaller numbers is considered relevant.

As Laukkonen et al. (2009) point out there are mitigation (and adaptation) strategies that benefit certain (social and environmental) vulnerable societal groups in detriment of the majority. If the co-benefits discourse incorporates opportunities for the improvement of the worst-off and/or of the vulnerable minorities, it has the potential to soften social and environmental inequalities. However, and to make those a reality, it is necessary that political institutions act on a deontological moral belief instead of a utilitarian one.

There are further advantages of including a deontological framework that come from the fact that it sustains arguments that account for human rights[8]. According to a deontological tradition, society has an obligation to make these rights a reality for all individuals and not just for the majority, as pursued by utilitarianism. Deontology makes universal the attainment of certain basic moral and physical conditions. At the same time, it creates, not only moral but also legal obligations, for nations and individuals, to favor them.

In the book *First, do no harm: human rights and efforts to combat climate change*, Roht-Arriaza (2009) proposes the idea of incorporating human rights concerns into climate change regime. However, in this paper, we argue even further, in terms of both an obligation and a justification to act for climate change mitigation. Decreasing GHG, by choosing strategies that have co-benefits directly related to human rights, is precisely justified by the universalism and high societal acceptance of the bill of Human Rights. For example, when co-benefits facilitate an adequate living standard and/or the access to education (UNICEF 2007; UN, 2015), they are both morally accepted and legitimized for every member of society, regardless of their social, gender, religious or other characteristics. Furthermore, they become socially (and in some cases, legally) compulsory.

It is possible to see how that, in general, and especially in cases of moral conflict, considerations about the fulfillment of rights can help guiding the action of politicians and citizens towards co-benefits' choices. Of course, it also makes evident the emergent trade-offs and the subsequent necessity of a consistent and inclusive moral justification for these choices. We argue that failing to take into consideration the rights and needs of underprivileged groups in society while considering co-benefits trade-offs is not in accordance with the principles of sustainability[9].

On the overall, the choice of any CCM strategy (with collateral benefits) will impact differently the quadrants of society, so moral dilemmas and trade-offs are, therefore, inevitable. Politicians and society in general, need to face them knowing that social and environmental inequalities can be diminished when the worst-off and/or the ones in fewer numbers become a priority on the overall reasoning. Failing to address such matters will further alienate them from CCM strategies because the chances to improve their situation and participation will continue to be missed out. Reflecting on justice and rights for (e.g. underprivileged) sectors of the population is a start towards the sustainable development we all desired. As we exemplify in the next section, some deontological moral elements were integrated into the co-benefits discourse. Still, they are far from being mainstream or enough for a just(er) sharing of the burdens and benefits of climate change.

The shape of co-benefits with a deontological matrix

This section discusses an example of a climate mitigation initiative whose moral frame and justification includes other moral arguments than the utilitarian ones. The objective of reflecting on this particular case is twofold: to address the (moral and practical) risks for populations involved in co-benefits under a utilitarian moral frame and to make clear the value of a more deontological moral orientation of co-benefits to surpass some of these risks.

REDD^{+} Programme is a financing mechanism, under the umbrella of the United Nations Framework Convention on Climate Change (UNFCCC), designed to help developing countries to reduce emissions from deforestation and forest degradation. In this case, 'a key concern is whether current approaches to REDD+ can promote synergies for a range of sustainability goals [...] (while) ensuring better livelihoods for local communities and indigenous peoples (Visseren-Hamakers, et al., 2012).

This climate change mitigation programme, like any other CCM initiative carries dangers that can '[...], in countries where land and resource tenure is unresolved and disputed, foster the reassertion of centralized government control at the expense of the rights of indigenous and local communities, further exacerbating an inequitable distribution of costs and benefits' (Visseren-Hamakers et al., 2012).

In response to such risk, REDD^{+} organizers tried to shape the program so to minimize potential bad impacts, especially on vulnerable populations. For that purpose, UNFCCC REDD+ created safeguards that 'respect (for) the knowledge and rights of indigenous peoples and members of local communities, by taking into account relevant international obligations, national circumstances and laws, [and...] the

full and effective participation of relevant stakeholders, in particular, indigenous peoples and local communities' (Visseren-Hamakers et al., 2012).

The initiative's documents show that minorities (and underprivileged) need to be protected and that moral (and legal) rights are a good strategy to prevent harm when CCM actions are put in place. Such concern also demonstrates the potential dual effect of sustainability strategies that might benefit some (sometimes the majority) but at the expenses of others.

So far, only a few environmental scientists and political agents understand the necessity of a morally inclusive framework as background for deliberation and justification of CCM. In the case of REDD+, these agents translated their concerns by institutionalizing 'safeguards' that are aligned with a moral perspective closer to the deontological tradition.

In the above citation, it is visible how reforestation promoted by REDD+, is considered to be an opportunity to remedy undesired situations. The aim is, via this program, to give real chances of deliberation and influence, to those that do not have the possibility to be agents of full capacity.

In this case of CCM, the co-benefits of reforestation are not only morally correct, and therefore should be put in place, but they are also necessary since they reestablish the means to the satisfaction of citizens' rights and autonomy.

Due to the deontological inspiration of this initiative, the number affected by this action does not affect the moral deservedness of the benefit. A person is entitled, by moral duty, to have the necessary conditions to be a fulfilled agent (Freeman, 1994), i.e. the individual is the center of moral consideration and not the marginal utility. REDD+ guidelines are centered on the individual and not on the collective good, may it be a general good (of all population) or a benefit for a specific group.

The cited safeguards would not be included if a utilitarian perspective would frame REDD+ because the aims of individual and (small) group empowerment or the recognition of rights are not objectives in a utilitarian framework. In the case of a utilitarian REDD+, indigenous populations would be left out of the benefits (and even, harmed) by the reforestation because the objective would be to maximize the positive outcomes. For example, instead of choosing trees present in the ecosystem and traditionally used by the indigenous tribes, the species planted under a utilitarian REDD+ would maximize CO_2 uptake and/or favor economic activities (e.g. tree logging). With a consequentialist design, indigenous populations might not have an (or any) active voice in the reforestation process because it would be less

effective (utility and aggregated good).

The implementations of safeguards to help define correct measures and best praxis demonstrates the acknowledgment by UNFCCC of the complexity of the moral implications of co-benefits, and of epistemological limitations of utilitarianism. However, this disposition is not shared by many political organizations when CMM activities are concerned.

In contrast to REDD+ but with similar objectives to the UN initiative, European Union leads a project on reforestation for more than 10 years (IUCN, 2004). The project is based on economic incentives for recovering and increase of forest area. Contrary to REDD+, the EU program was conceived under a utilitarian frame. There is a distinct top-down organization, where stakeholders do not intervene significantly. The supporting documents, as well as research done on this initiative, focus mainly on the quantification of beneficial (or detrimental) consequences of the action. The net benefit (e.g. new forest area) is the measure of success.

Since EU afforestation initiative is not sufficiently successful, Weber (1998) and Linser & Wolfslehner (2015) suggest that it would beneficiate from incorporating aspects that are related to socio-economic aspects i.e. according to the mentioned authors, the program needs to focus on the specific characteristics of the people they affect or else they do not cooperate and/or are negatively affected.

We claim that the approach to co-benefits by the EU reforestation program is dropping relevant prospects of environmental and social justice. The literature on the subject establishes that, especially in the south of Europe, the potential rural areas to be transformed into forest are the property of small owners or belong to the state (Mendes et al., 2006). This means that with the right moral orientation, such an initiative could establish new participatory mechanisms for these small owners as well as create real mechanisms of fighting poverty with autonomy (independence of state subsidies). E.g. the development of enhancing forestry programs would teach the small owners to get added income out of their plots.

As we tried to make clear so far, there are shortcomings to utilitarian principles that guide co-benefits discourse and praxis. Such weaknesses may dictate moral confusion in scientists and politicians, making them less able to cope with the moral uncertainty of their suggestions and judgments. Looking away from utilitarianism and to deontological principles may help them find guidelines suited for dealing rightfully with underprivileged individuals or groups.

The potential of co-benefits as promoters of climate change mitigation action

CCM effort is translated into several actions and discourses that make collateral benefits increasingly more relevant for sustainability, in such a way that they are now a constant part of the political agenda (Aunan et al., 2004; He et al., 2010). The reviewed literature seems to be unanimous in regarding collateral benefits of climate change as a powerful argument to engage society in a common effort to mitigate climate change (Brown, Seymour, & Peskett, 2008; Dora, 1999; Shrestha & Pradhan, 2010).

From the examples analyzed so far, it is possible to establish that the co-benefits rationale is strongly influenced by a normative framework that carries the 'height of rightness' and such height should not be undervalued in terms of personal and collective influence. The moral side of man can be explained and explored from many perspectives, and they all agree on the extraordinary power of moral convictions in terms of informing thought and action (Ryle, 1940; van Zomeren et al., 2011).

This particular notion is becoming translated into evaluative considerations about the added value of (some) climate change initiatives such as REDD+ (Chhatre et al., 2012; Olander, Galik, & Kissinger, 2012).

If science is changing from being right to be proven right (Hess, 1997; Shapin, 2010), in the case of climate change, the scientific and political debate is being influenced in such a way that, ethical and moral reasoning is becoming incorporated in the global discourse.

Discussions and conclusions about what is right, regarding the potential of collateral benefits (Haines et al., 2009; Harlan & Ruddell, 2011), even in scientific literature, are slowly being integrated with (sometimes, not so hidden) values and evaluative considerations. Apparently, this is even more significant when it comes to the advertising of the (potentially) good outcomes of climate change through co-benefits.

International institutions have already started to understand that, in order to make climate change mitigation a reality, normative considerations on co-benefits can be an ally.

The alignment of strategies that safeguard dignity, respect the individual and the environment has the capacity of engaging the collective, regardless of social or geographical boundaries. In the words of the executive director of UNICEF, 'what is good for children – reducing pollution, safeguarding education and health, preserving environmental diversity, protecting water supplies, increasing access to

proper sanitation (examples of co-benefits) – is also good for the planet' (UNICEF, 2007).

However, we go further and propose that potential CCM strategies with co-benefits should be weighted within a moral frame that includes rights and dignity, in the sense that policymakers should include, as decision criteria, moral principles based on deontology. When designing strategies for this purpose, there is the chance to anticipate the effects of some co-benefits and use this knowledge to incorporate guidelines to potentiate them fully. While doing so, it is possible to guide such strategies to guarantee advantages for the populations/individuals that are a minority and/or worst-off.

The design and application of specific climate mitigation strategies can include values of respect, dignity and human rights by targeting their emergent co-benefits. It is possible to conceive that an urban region should choose to decrease their emissions of GHG by, among other actions, promote community gardens. This type of initiative has the potential of creating additional sources of income and social acceptance to marginalized minorities and at the same time, serve to engage these communities in fighting global warming more actively. By making the change with the people, CCM can be better perceived and gain more acceptance. However, ideas such as community gardens cannot thrive if the main objective of co-benefits discourse and action is conceived in mere utility because the aggregated advantage might not be as high as possible.

Furthermore, co-benefits framed as we propose here, have the potential to strengthen personal and collective responsibility towards CCM strategy. A communitarian framework (Leeper, 1996) can facilitate the political and social influence of co-benefits through their articulation with public goods and governance. By looking at co-benefits as part of the common good, the cost of CCM actions is further supported ethically and politically. With the (re-)design of CCM strategies which respect and enhance individual's rights, we are fostering healthier communities. Moreover, by giving opportunities for individuals 'of a democratic community (to) rise above their own self-interest in public matters (and) seek the common good, that they join together with others to form public policy, and that they act to bring this vision to fruition' (Daly, 1994):20.

CCM initiatives with co-benefits that nurture rights and respect moral obligations have the additional advantage of promoting social cohesion, in contextualized and easily recognizable ways, for all citizens. As mentioned in the case of the community gardens, people can experience the impact of being a positive force in their community and partaking in the reinforcement of the moral commitment towards the environment and the social order.

A more deontological approach to CCM strategies can this way promote values that are at the core of sustainability, such as environmental and social justice. Failing to proper acknowledge and integrate them will turn CCM actions ineffective and jeopardize the future of all.

Conclusion

Society regards co-benefits as being favorable outcomes from climate mitigation action. Such collective ideas of good is a perfect object for philosophical reflection. An ethical scrutiny of the CCM discourse makes visible the moral aspect of the deliberation process that includes both scientists and politicians. This process involves not only trying to find the best course of action, but also to justify recommendations and options. So far, co-benefits rationale has been studied mainly by sciences (environmental, economic and political) but a normative perspective should be critically added. Such inclusion will promote a more integrated analysis process, where beliefs, needs, and expectations of all are considered, especially if they involve underprivileged individuals.

By referencing several examples of co-benefits of climate change mitigation, we have shown that the main normative framework informing co-benefits rationale is utilitarian. Climate change action which creates (co-) benefits has been, so far, essentially morally justified because it creates (added) good to more people. An additional reason for the common use of utilitarianism in CCM is that their arguments are easy to integrate straightforwardly into the political discourse.

Nonetheless, we establish that this ethical tradition does not account for all of the normative potential of this phenomenon. Utilitarianism does not account well for the benefits that are not translated into utility and it puts in second place the underprivileged groups because they are in fewer numbers. Some CCM strategies (e.g. reforestation) have the potential to harm these vulnerable groups and a CCM program with a utilitarian moral frame will not protect them, much less beneficiate them in detriment of larger groups.

However, a deontological perspective offers a set of principles that consider human dignity and individual justice as pillars for moral action. The improvement of basic conditions for human life and the obligation to pursue them, give extra strength the co-benefits discourse.

Although still in minority, deontological arguments are present in a few policy documents regarding climate change, such as REDD+. This program is a striking example of the pressing need to overcome the limitations of the present paradigm on co-benefits rationale (utilitarianism), as it includes moral safeguards about the civil

participation of indigenous populations so to prevent their rights to be overridden by the majority.

Considering co-benefits, as means to assert and defend rights of (e.g. native, underprivileged) populations has the potential to become a new moral trend because it facilitates decision-making in terms of trade-offs concerning both CCM and co-benefits[10].

Bringing forward (new) arguments for CCM action, which do not relate directly to scientific and political concepts but to the moral realm has the added value of allowing a layman to better engage this theme. Following this line of reasoning, including considerations, in the discussion of climate change, about what is fair, just and correct, relates to everyone, since each individual is capable of moral reasoning.

When scientists and politicians, throughout recommendations, legislation, and projects, start including moral arguments that accommodate moral expectations of those who are on the fringe of society (e.g. indigenous populations), there is a fairer chance that such communities will take further interest in thriving for a sustainable future. Furthermore, and if political and social conditions are created, for instance, throughout co-benefits, these societal groups may actually beneficiate from climate change mitigation processes, as autonomous recipients of advantages and as active partners in deliberation and action phases (e.g. REDD^{+} program).

We call for further research to specify the practical means to make the increment of environmental and social justice via co-benefits. In addition, exploring other ethical approaches besides deontology and utilitarianism might also bring other relevant moral arguments towards the effectiveness CCM action.

As argued in this paper, the present challenge is to make evident to environmental agents that there are other moral traditions besides utilitarianism to guide their action and justify their options. For the sake of promoting environmental and social justice and of a more effective and conclusive CCM strategy, it is now critical to include rights and moral obligations when considering the impacts of co-benefits.

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Notes

[1] Using Google scholar search, in January 2017, we obtained no more than 10 articles on co-benefits and moral justification (search terms- 'moral justification' and 'co-benefits'). The result is quite the opposite when searching for co-benefits publications within natural and economy sciences.

[2] In this paper, the concept of deontology is used in general terms and in contrast to consequentialism. We do not follow a particular theory but we build on the fact that deontological theories focus on the means and not on the possible good coming from consequences i.e. according to deontology theory, the ends do not justify the means. Generally, deontological thought advocates that there can be choices morally wrong even if they originate more good and/or less bad. In this paper, we follow the idea that what makes choices right is their conformity with moral norms. In sum, what is right has priority over what is good. Another important aspect of what we consider relevant in deontology is that certain options can be right even if those actions do not maximize good consequences, because the rightness of such options comes from their embodiment of certain norms. Moreover, a moral agent can (weak sense) or should (strong sense) take such (right) options even though they generate less good outcomes.

[3] Utilitarianism and particularly contemporary utilitarianism encompasses several much differentiated ethical 'lines. Still, it is possible to devise as a common and general principle the maximization the overall good as being the purpose of moral action. Bykvist (2009) and Scarre (1996) discuss general characteristics of utilitarianism.

[4] Nature has placed mankind under the governance of two sovereign masters, *pain* and *pleasure.'* (*Principles* I 1) (Bentham, 1823).

[5] Bentham and Mill have different opinions about how sensible people are to others pleasures or pains, affecting consequently the success of recommendations targeted to group benefits (Jakob, 2006). Nevertheless, and in spite of such differences, they both agree that, to some extent, arguments focusing on others experiences have some personal impact. As Mill et al (1869) writes 'the pleasures or pains of another person can only be pleasurable or painful to us through the association of our own pleasures and pains with them, is true in one sense, which is probably that intended by the author, but not true in another, against which he has not sufficiently guarded his mode of expression. It is evident, that the only pleasures or pains of which we have direct experience ... [are] those felt by ourselves ... [and] that the pleasure or pain with which we contemplate the pleasure or pain felt by someone else, is itself a pleasure or pain of our own. But if it be meant that in such cases the pleasure or pain is consciously referred to self, I take this to be a mistake' (*Notes* II 217–18).

[6] Though first elaborated in the XIX century, Bentham concept of utility is valid until now, and above all, it influenced every following perspective on utilitarianism. 'By utility is meant the property in any object, whereby it tends to produce benefit, advantage, pleasure, or happiness, (all this in the present case comes to the same thing) or (what comes again to the same thing) to prevent the happening of mischief, pain, evil or unhappiness' (Bentham, 1823).

[7] The fifth IPCC summary for policymakers (2013) is an example of such dual approach, where leverage and prevention of damage are argumentative weapons in favor of co-benefits, and by extension of CCM. The same strategy is used on Chapter 11- Human Health: Impacts, Adaptation and Co-benefits, were the authors start describing the health effects of climate change (e.g. increased infections, malaria outburst, dengue fever) and finish by focusing on the added benefit of tackling CCM (e.g. reduction of co-pollutants and improved access to reproductive health services) (IPCC, 2014).

[8] We consider here, rights to be moral principles or norms that guaranty fundamental standards for life (OHCHR, 2015).

[9] Social justice is one of the pillars of sustainability and sustainable development (Hansmann et al. 2012).

[10] In the majority of cases, decision makers have several viable CCM strategy options to meet environmental targets but each possible solution has advantages and

pitfalls i.e. there are inherent trade-offs to each CCM decision. We argue that this type of choices originate with two kinds of trade-offs: CCM trade-off and co-benefit(s) trade-off(s). To demonstrate this effect, we will use the examples from Vasconcellos Oliveira & Thorseth (2016) article on co-benefits. In the case described in the paper, the objective was to decrease GHG emissions associated with urban transportation. In response, the mayor of Hasselt (Belgium) decided to make urban public transportation free of charge, while the Norwegian politicians chose to finance the purchase of electric vehicles. In these examples, the CCM trade-off was favoring common good (public transportation) vs promoting individual benefit (private transportation), while co-benefit trade-off was choosing from having less traffic (less noise) or 'better' traffic (improved urban air quality). Despite opting for different CCM actions, both decision makers used moral reasoning and argumentation to choose and justify their options as demonstrated by the authors.

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